

PATENT COOPERATION TREATY

PCT

NOTIFICATION OF ELECTION

(PCT Rule 61.2)

From the INTERNATIONAL BUREAU

To:

Assistant Commissioner for Patents
United States Patent and Trademark
Office
Box PCT
Washington, D.C.20231
ETATS-UNIS D'AMERIQUE

in its capacity as elected Office

Date of mailing (day/month/year)
05 June 2000 (05.06.00)

International application No.
PCT/IB99/01778

Applicant's or agent's file reference
E 564 PCT - ks

International filing date (day/month/year)
12 October 1999 (12.10.99)

Priority date (day/month/year)
15 October 1998 (15.10.98)

Applicant

GRANATA, Tebaldo

1. The designated Office is hereby notified of its election made:



in the demand filed with the International Preliminary Examining Authority on:

26 April 2000 (26.04.00)



in a notice effecting later election filed with the International Bureau on:

2. The election ☒ was

was not

made before the expiration of 19 months from the priority date or, where Rule 32 applies, within the time limit under Rule 32.2(b).

The International Bureau of WIPO
34, chemin des Colombettes
1211 Geneva 20, Switzerland

Facsimile No.: (41-22) 740.14.35

Authorized officer

Olivia RANAIVOJAONA

Telephone No.: (41-22) 338.83.38

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PATENT COOPERATION TREATY

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From the INTERNATIONAL BUREAU

NOTICE INFORMING THE APPLICANT OF THE
COMMUNICATION OF THE INTERNATIONAL
APPLICATION TO THE DESIGNATED OFFICES

(PCT Rule 47.1(c), first sentence)

To:

NÖTH, Heinz
Arnulfstrasse 25
D-80335 München
ALLEMAGNEPatentanwaltskanzlei Nöth
Eingang / Receipt

28. APR. 2000

Frist: /.....

Vorlage: /.....

Date of mailing (day/month/year)

20 April 2000 (20.04.00)

Applicant's or agent's file reference

E 564 PCT - ks

IMPORTANT NOTICE

International application No.

PCT/IB99/01778

International filing date (day/month/year)

12 October 1999 (12.10.99)

Priority date (day/month/year)

15 October 1998 (15.10.98)

Applicant

SNAP-ON TECHNOLOGIES, INC. et al

1. Notice is hereby given that the International Bureau has communicated, as provided in Article 20, the international application to the following designated Offices on the date indicated above as the date of mailing of this Notice:

AU,CN,JP,KP,KR,US

In accordance with Rule 47.1(c), third sentence, those Offices will accept the present Notice as conclusive evidence that the communication of the international application has duly taken place on the date of mailing indicated above and no copy of the international application is required to be furnished by the applicant to the designated Office(s).

2. The following designated Offices have waived the requirement for such a communication at this time:

AE,AL,AM,AP,AT,AZ,BA,BB,BG,BR,BY,CA,CH,CU,CZ,DE,DK,EA,EE,EP,ES,FI,GB,GD,GE,GH,GM,
HR,HU,ID,IL,IN,IS,KE,KG,KZ,LC,LK,LR,LS,LT,LU,LV,MD,MG,MK,MN,MW,MX,NO,NZ,OA,PL,PT,
RO,RU,SD,SE,SG,SI,SK,SL,TJ,TM,TR,TT,UA,UG,UZ,VN,YU,ZA,ZW

The communication will be made to those Offices only upon their request. Furthermore, those Offices do not require the applicant to furnish a copy of the international application (Rule 49.1(a-bis)).

3. Enclosed with this Notice is a copy of the international application as published by the International Bureau on 20 April 2000 (20.04.00) under No. WO 00/21871

REMINDER REGARDING CHAPTER II (Article 31(2)(a) and Rule 54.2)

If the applicant wishes to postpone entry into the national phase until 30 months (or later in some Offices) from the priority date, a demand for international preliminary examination must be filed with the competent International Preliminary Examining Authority before the expiration of 19 months from the priority date.

It is the applicant's sole responsibility to monitor the 19-month time limit.

Note that only an applicant who is a national or resident of a PCT Contracting State which is bound by Chapter II has the right to file a demand for international preliminary examination.

REMINDER REGARDING ENTRY INTO THE NATIONAL PHASE (Article 22 or 39(1))

If the applicant wishes to proceed with the international application in the national phase, he must, within 20 months or 30 months, or later in some Offices, perform the acts referred to therein before each designated or elected Office.

For further important information on the time limits and acts to be performed for entering the national phase, see the Annex to Form PCT/IB/301 (Notification of Receipt of Record Copy) and Volume II of the PCT Applicant's Guide.

The International Bureau of WIPO
34, chemin des Colombettes
1211 Geneva 20, Switzerland

Authorized officer

J. Zahra

Facsimile No. (41-22) 740.14.35

Telephone No. (41-22) 338.83.38

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PATENT COOPERATION TREATY

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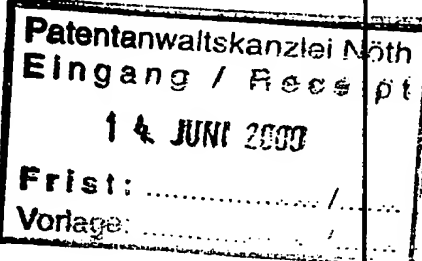
From the INTERNATIONAL BUREAU

INFORMATION CONCERNING ELECTED
OFFICES NOTIFIED OF THEIR ELECTION

(PCT Rule 61.3)

To:

NÖTH, Heinz
Arnulfstrasse 25
D-80335 München
ALLEMAGNE



Date of mailing (day/month/year) 05 June 2000 (05.06.00)		
Applicant's or agent's file reference E 564 PCT - ks		IMPORTANT INFORMATION
International application No. PCT/IB99/01778	International filing date (day/month/year) 12 October 1999 (12.10.99)	
Priority date (day/month/year) 15 October 1998 (15.10.98)		
Applicant SNAP-ON TECHNOLOGIES, INC. et al		

1. The applicant is hereby informed that the International Bureau has, according to Article 31(7), notified each of the following Offices of its election:

AP : GH, GM, KE, LS, MW, SD, SL, SZ, TZ, UG, ZW
 EP : AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE
 National : AU, BG, BR, CA, CN, CZ, DE, IL, JP, KP, KR, MN, NO, NZ, PL, RO, RU, SE, SK, US

2. The following Offices have waived the requirement for the notification of their election; the notification will be sent to them by the International Bureau only upon their request:

EA : AM, AZ, BY, KG, KZ, MD, RU, TJ, TM
 OA : BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG
 National : AE, AL, AM, AT, AZ, BA, BB, BY, CH, CU, DK, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU,
 ID, IN, IS, KE, KG, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MW, MX, PT, SD, SG, SI, SL, TJ,
 TM, TR, TT, UA, UG, UZ, VN, YU, ZA, ZW

3. The applicant is reminded that he must enter the "national phase" before the expiration of 30 months from the priority date before each of the Offices listed above. This must be done by paying the national fee(s) and furnishing, if prescribed, a translation of the international application (Article 39(1)(a)), as well as, where applicable, by furnishing a translation of any annexes of the international preliminary examination report (Article 36(3)(b) and Rule 74.1).

Some offices have fixed time limits expiring later than the above-mentioned time limit. For detailed information about the applicable time limits and the acts to be performed upon entry into the national phase before a particular Office, see Volume II of the PCT Applicant's Guide.

The entry into the European regional phase is postponed until 31 months from the priority date for all States designated for the purposes of obtaining a European patent.

The International Bureau of WIPO
34, chemin des Colombettes
1211 Geneva 20, Switzerland

Authorized officer:

Olivia RANAIVOJAONA

Facsimile No. (41-22) 740.14.35

Telephone No. (41-22) 338.83.38

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REC'D 26 JAN 2001

WIPO

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INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)



Applicant's or agent's file reference E 564 PCT - ks	FOR FURTHER ACTION See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416)	
International application No. PCT/IB99/01778	International filing date (day/month/year) 12/10/1999	Priority date (day/month/year) 15/10/1998
International Patent Classification (IPC) or national classification and IPC B66F7/08		
Applicant SNAP-ON TECHNOLOGIES, INC. et al.		

1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.
2. This REPORT consists of a total of 6 sheets, including this cover sheet.
 - ☒ This report is also accompanied by ANNEXES, i.e. sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).

These annexes consist of a total of 3 sheets.

3. This report contains indications relating to the following items:

- I ☒ Basis of the report
- II ☐ Priority
- III ☐ Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- IV ☐ Lack of unity of invention
- V ☒ Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- VI ☐ Certain documents cited
- VII ☒ Certain defects in the international application
- VIII ☒ Certain observations on the international application

Date of submission of the demand 26/04/2000	Date of completion of this report 24.01.2001
Name and mailing address of the international preliminary examining authority:  European Patent Office D-80298 Munich Tel. +49 89 2399 - 0 Tx: 523656 epmu d Fax: +49 89 2399 - 4465	Authorized officer Ferrien, Y Telephone No. +49 89 2399 7481 

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**INTERNATIONAL PRELIMINARY
EXAMINATION REPORT**

International application No. PCT/IB99/01778

I. Basis of the report

1. This report has been drawn on the basis of *(substitute sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to the report since they do not contain amendments (Rules 70.16 and 70.17).):*

Description, pages:

2-4 as originally filed

1,1a as received on 30/10/2000 with letter of 27/10/2000

Claims, No.:

1 as received on 30/10/2000 with letter of 27/10/2000

Drawings, sheets:

1/1 as originally filed

2. With regard to the **language**, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

These elements were available or furnished to this Authority in the following language: , which is:

- ☐ the language of a translation furnished for the purposes of the international search (under Rule 23.1(b)).
- ☐ the language of publication of the international application (under Rule 48.3(b)).
- ☐ the language of a translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).

3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

- ☐ contained in the international application in written form.
- ☐ filed together with the international application in computer readable form.
- ☐ furnished subsequently to this Authority in written form.
- ☐ furnished subsequently to this Authority in computer readable form.
- ☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
- ☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. The amendments have resulted in the cancellation of:

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**INTERNATIONAL PRELIMINARY
EXAMINATION REPORT**

International application No. PCT/IB99/01778

- ☐ the description, pages:
☐ the claims, Nos.:
☐ the drawings, sheets:

5. ☒ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed (Rule 70.2(c)):

(Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.)

see separate sheet

6. Additional observations, if necessary:

V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes:	Claims	1
	No:	Claims	
Inventive step (IS)	Yes:	Claims	1
	No:	Claims	
Industrial applicability (IA)	Yes:	Claims	1
	No:	Claims	

2. Citations and explanations
see separate sheet

VII. Certain defects in the international application

The following defects in the form or contents of the international application have been noted:
see separate sheet

VIII. Certain observations on the international application

The following observations on the clarity of the claims, description, and drawings or on the question whether the claims are fully supported by the description, are made:
see separate sheet

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Re Item I

Basis of the report

The amendments filed with the letter dated 27/10/2000 introduce subject-matter which extends beyond the content of the application as filed, contrary to Article 34(2)(b) PCT. The amendment concerned is the following:

According to the application as originally filed, the invention can only relate to vehicle lifts of the scissors-type. The generalisation in the amended version of claim 1 to vehicle lifts in general introduces therefore subject-matter which extends beyond the content of the application as filed, contrary to Article 34(2)b PCT.

It will therefore be considered when assessing novelty and inventive step of the claim that the invention relates to vehicle lifts of the scissors-type.

Re Item V

Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Novelty:

Document D1: FR-A-1 575 128 discloses a scissors-type vehicle lift comprising a single runway and a volumetric operating system (Fig.2), comprising a plurality of cylinders 38, 40 for movement of the vehicle lifting runway 14, including main cylinders 38 and secondary cylinders 40, of which the main cylinder 38 receives the operating fluid directly from supply means 110, and the secondary cylinder 40 receives the operating fluid from the outlet of the main cylinder 38, whereby with the runway 14 there is associated the main cylinder 38 and the secondary cylinder 40 (see Fig.1- 2 and the description p.7 l.41-p.8 l.7).

Claim 1 differs from D1 in that the vehicle lift comprises two runways and in that the outlet of each main cylinder which is associated with one of the runways supplies a secondary cylinder which is associated with the other runway.

Since the features of claim 1 are not disclosed in their entirety either in D1 or in any other document cited in the international search report, claim 1 is therefore

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novel (Article 33(2) PCT).

1.2. Inventive step:

The problem to be solved by the present invention may be regarded as being to achieve a better synchronised simultaneous movement of several runways.

D2: WO 95 11190 A discloses a lifting device including two runways 1a, 1b, each of them being lifted by the action of a single cylinder, respectively P1 and P2, the outlet of the primary cylinder P1 supplying the secondary cylinder P2, P1 and P2 being synchronised by means of a synchronisation device 17.

Even if the skilled person were to modify D1 in the light of the teachings of D2 or in the light of the common knowledge of a skilled person, he would not arrive at the system claimed in claim 1.

The objections raised in sections I and VIII apart, claim 1 is therefore considered to involve an inventive step (Article 33(3) PCT).

1.3. Industrial applicability:

The claimed scissors-type vehicle lift is industrially applicable (Article 33(4) PCT).

Re Item VII

Certain defects in the international application

1. The description is not in conformity with the claims as required by Rule 5.1(a)(iii) PCT (in particular page 1a, last paragraph and page 2, first paragraph).

Re Item VIII

Certain observations on the international application

1. It is not clear from claim 1 how many runways the claimed vehicle lift comprises, since reference is first made to possibly more than two runways ("vehicle lift comprising lifting runways" and "one of the runways", see lines 1 and 16-17)

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**INTERNATIONAL PRELIMINARY
EXAMINATION REPORT - SEPARATE SHEET**

International application No. PCT/IB99/01778

whereas the passage "associated with the other runway" (see line 18) seems to indicate that the vehicle lift comprises only two runways. This contradiction renders claim 1 unclear, thus contravening Art.6 PCT.

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PATENT COOPERATION TREATY

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INTERNATIONAL SEARCH REPORT

(PCT Article 18 and Rules 43 and 44)

Applicant's or agent's file reference E 564 PCT - ks	FOR FURTHER ACTION see Notification of Transmittal of International Search Report (Form PCT/ISA/220) as well as, where applicable, Item 5 below.	
International application No. PCT/IB 99/01778	International filing date (day/month/year) 12/10/1999	(Earliest) Priority Date (day/month/year) 15/10/1998
Applicant SNAP-ON TECHNOLOGIES, INC. et al.		

This International Search Report has been prepared by this International Searching Authority and is transmitted to the applicant according to Article 18. A copy is being transmitted to the International Bureau.

This International Search Report consists of a total of 2 sheets.

☒ It is also accompanied by a copy of each prior art document cited in this report.

1. Basis of the report

a. With regard to the language, the International search was carried out on the basis of the International application in the language in which it was filed, unless otherwise indicated under this item.

☐ the International search was carried out on the basis of a translation of the International application furnished to this Authority (Rule 23.1(b)).

b. With regard to any nucleotide and/or amino acid sequence disclosed in the International application, the International search was carried out on the basis of the sequence listing:

☐ contained in the International application in written form.

☐ filed together with the International application in computer readable form.

☐ furnished subsequently to this Authority in written form.

☐ furnished subsequently to this Authority in computer readable form.

☐ the statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the International application as filed has been furnished.

☐ the statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

2. ☐ Certain claims were found unsearchable (See Box I).

3. ☐ Unity of invention is lacking (see Box II).

4. With regard to the title,

☒ the text is approved as submitted by the applicant.

☐ the text has been established by this Authority to read as follows:

5. With regard to the abstract,

☒ the text is approved as submitted by the applicant.

☐ the text has been established, according to Rule 38.2(b), by this Authority as it appears in Box III. The applicant may, within one month from the date of mailing of this International search report, submit comments to this Authority.

6. The figure of the drawings to be published with the abstract is Figure No.

☒ as suggested by the applicant.

☐ because the applicant failed to suggest a figure.

☐ because this figure better characterizes the invention.

2

☐ None of the figures.

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INTERNATIONAL SEARCH REPORT

International Application No

PCT/IB 99/01778

A. CLASSIFICATION OF SUBJECT MATTER
IPC 7 B66F7/08

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
IPC 7 B66F

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the International search (name of data base and, where practical, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	W0 95 11190 A (RAVAGLIOLI S.P.A.) 27 April 1995 (1995-04-27) page 1-8; figures 1-7 -----	1
A	FR 1 575 128 A (CASCADE CORP.) 18 July 1969 (1969-07-18) page 1-8; figures 1,2 -----	1

☐ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

* Special categories of cited documents :

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier document but published on or after the International filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the International filing date but later than the priority date claimed

"T" later document published after the International filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

"&" document member of the same patent family

Date of the actual completion of the International search

11 February 2000

Date of mailing of the International search report

18/02/2000

Name and mailing address of the ISA

European Patent Office, P.B. 5818 Patentlaan 2
NL - 2280 HV Rijswijk
Tel. (+31-70) 340-2040, Tx. 31 651 epo nl,
Fax: (+31-70) 340-3016

Authorized officer

Vollering, J

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INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/IB 99/01778

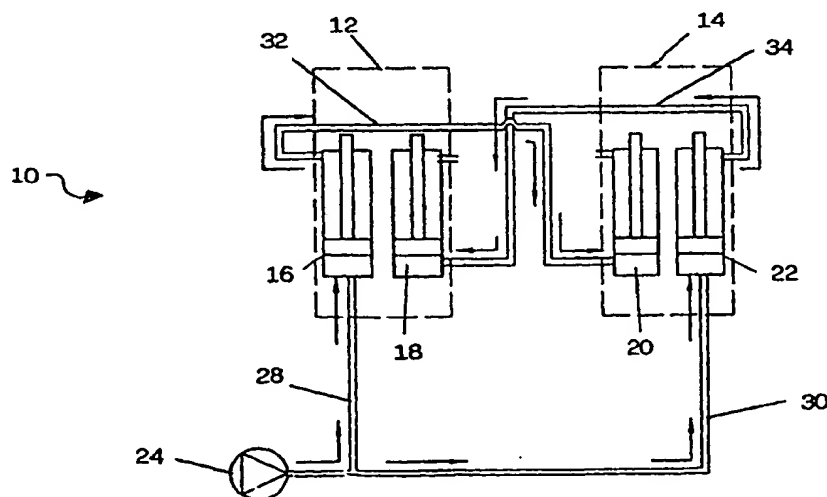
Patent document cited in search report	Publication date	Patent family member(s)	Publication date
WO 9511190 A	27-04-1995	IT 1264250 B AT 166038 T AU 8114694 A DE 69410283 D DE 69410283 T DE 724542 T EP 0724542 A ES 2116062 T	23-09-1996 15-05-1998 08-05-1995 18-06-1998 01-10-1998 03-04-1997 07-08-1996 01-07-1998
FR 1575128 A	18-07-1969	GB 1183676 A JP 48044461 B US 3476016 A	11-03-1970 25-12-1973 04-11-1969

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INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(51) International Patent Classification ⁷ : B66F 7/08	A1	(11) International Publication Number: WO 00/21871 (43) International Publication Date: 20 April 2000 (20.04.00)
<p>(21) International Application Number: PCT/IB99/01778</p> <p>(22) International Filing Date: 12 October 1999 (12.10.99)</p> <p>(30) Priority Data: MI98A002217 15 October 1998 (15.10.98) IT</p> <p>(71) Applicant (for all designated States except US): SNAP-ON TECHNOLOGIES, INC. [US/US]; 420 Barclay Boulevard, Lincolnshire, IL 60069 (US).</p> <p>(72) Inventor; and (75) Inventor/Applicant (for US only): GRANATA, Tebaldo [IT/IT]; Via Giovanni Pascoli 62, I-65010 Cappelle sul Tavo (IT).</p> <p>(74) Agent: NÖTH, Heinz; Arnulfstrasse 25, D-80335 München (DE).</p>		<p>(81) Designated States: AE, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, US, UZ, VN, YU, ZA, ZW, ARIPO patent (GH, GM, KE, LS, MW, SD, SL, SZ, TZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG).</p> <p>Published With international search report. Before the expiration of the time limit for amending the claims and to be republished in the event of the receipt of amendments. In English translation (filed in Italian).</p>

(54) Title: VOLUMETRIC OPERATING SYSTEM FOR VEHICLE LIFTS



(57) Abstract

A description is provided of a volumetric operating system (10) for scissors-type vehicle lifts, comprising a plurality of cylinders (16, 18, 20, 22) for movement of the vehicle lifting runways (12, 14), of which the main cylinders (16, 22) receive the operating fluid directly from supply means (24, 28, 30), and the secondary cylinders (18, 20) receive the operating fluid from the outlet (32, 34) of a respective one of the main cylinders (16, 22), wherein with each runway (12, 14) there is associated at least one of the said main cylinders (16, 22), and at least one of the said secondary cylinders (18, 20). Preferably, the outlet of each main cylinder (16, 22) which is associated with one of the runways (12, 14) supplies a secondary cylinder (18, 20) which is associated with the other runway (12, 14).

FOR THE PURPOSES OF INFORMATION ONLY

Codes used to identify States party to the PCT on the front pages of pamphlets publishing international applications under the PCT.

AL	Albania	ES	Spain	LS	Lesotho	SI	Slovenia
AM	Armenia	FI	Finland	LT	Lithuania	SK	Slovakia
AT	Austria	FR	France	LU	Luxembourg	SN	Senegal
AU	Australia	GA	Gabon	LV	Latvia	SZ	Swaziland
AZ	Azerbaijan	GB	United Kingdom	MC	Monaco	TD	Chad
BA	Bosnia and Herzegovina	GE	Georgia	MD	Republic of Moldova	TG	Togo
BB	Barbados	GH	Ghana	MG	Madagascar	TJ	Tajikistan
BE	Belgium	GN	Guinea	MK	The former Yugoslav	TM	Turkmenistan
BF	Burkina Faso	GR	Greece		Republic of Macedonia	TR	Turkey
BG	Bulgaria	HU	Hungary	ML	Mali	TT	Trinidad and Tobago
BJ	Benin	IE	Ireland	MN	Mongolia	UA	Ukraine
BR	Brazil	IL	Israel	MR	Mauritania	UG	Uganda
BY	Belarus	IS	Iceland	MW	Malawi	US	United States of America
CA	Canada	IT	Italy	MX	Mexico	UZ	Uzbekistan
CF	Central African Republic	JP	Japan	NE	Niger	VN	Viet Nam
CG	Congo	KE	Kenya	NL	Netherlands	YU	Yugoslavia
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CZ	Czech Republic	LC	Saint Lucia	RU	Russian Federation		
DE	Germany	LI	Liechtenstein	SD	Sudan		
DK	Denmark	LK	Sri Lanka	SE	Sweden		
EE	Estonia	LR	Liberia	SG	Singapore		

Title: "VOLUMETRIC OPERATING SYSTEM FOR VEHICLE LIFTS"

5

TEXT OF THE DESCRIPTION

The present invention relates to vehicle lifts, in particular of the scissors type. In the following description, scissors-type lifts mean in general scissors-
10 and double-scissors-type lifts, in which, when the scissors are closed, the lift is lowered to ground level, and when the scissors are open, the lift is raised, and inverted- and double-inverted-scissors-type lifts, in which the scissors open beneath ground level, in order to lower the
15 lift, and are closed at ground level in order to raise the lift, optionally with the assistance of pistons or rack-type mechanisms.

Scissors-type lifts have been developed in which, in
20 order to move the lift, a pair of cylinders is provided for each of the lifting scissors of the runways. The known operating system for the cylinders is of the serial type, i.e. in a first runway there are disposed the main cylinders, the outlet of which supplies the secondary
25 cylinders which are associated with the other runway. This arrangement requires temporally staggered raising of the two runways, and thus gives rise to a loss of parallelism of the vehicle relative to the ground. In addition, the force on the pair of cylinders is asymmetrical, with all
30 the resulting problems.

The object of the present invention is thus to provide a volumetric operating system for vehicle lifts, in particular of the scissors type, which permits synchronised
35 movement of the runways.

This problem is solved remarkably well by means of a volumetric operating system according to claim 1, for vehicle lifts. Further advantageous characteristics of the said system are indicated in the dependent claims.

5

The characteristics, objects and advantages of the present invention will become more apparent from the following description and from the attached drawings relative to a non-limiting embodiment. In the various

10 figures:

Figure 1 is a schematic view of the volumetric operating system for lifts according to the prior art; and

Figure 2 is a schematic view of the volumetric operating system for lifts according to the present
15 invention.

With reference firstly to figure 1, a volumetric operating system 100 for scissors-type vehicle lifts has firstly two runways 112, 114. With each runway there is
20 associated at least one pair of scissors (not shown), which is controlled by a respective pair of cylinders 116, 118 and 120, 122. Pressurised fluid, for example oil, air or liquid, is supplied via a valve 124 and two pipes 128 and 130 to the two cylinders 116 and 118 which are associated
25 with the first runway 112. It will be appreciated that upstream from the valve 124, there are present the corresponding command and control components, which are not described in detail, since they are not relevant for the purposes of the present invention. Two pipes 132, 134
30 supply respectively to the two cylinders 120, 122 which are associated with the second runway 114, the fluid output from the rod chamber of the cylinders 116, 118. In other words, the system 100 is of the serial type, in which, with the first runway 112 there are associated the main
35 cylinders 116, 118, and with the second runway 114 there are associated the secondary cylinders 120, 122. However, since in a volumetric system the main cylinders tend to

fill before the secondary cylinders, in the case of the device in figure 1, the runway 112 tends to rise before the runway 114. Consequently, the vehicle is not raised perfectly parallel to the ground, and the force on the pairs of cylinders is asymmetrical, with all the resulting problems.

Figure 2 illustrates a volumetric operating system 10 according to the invention, for scissors-type vehicle lifts, in which the components of the system 10 which correspond to those of the system 100 in figure 1 have corresponding reference numbers, but reduced by 100. Thus, with each runway 12, 14, there is associated at least one pair of scissors (not shown), which is controlled by a respective pair of cylinders 16, 18 and 20, 22. However, according to the present invention, the pressurised fluid is supplied via a valve 24 and two pipes 28, 30, to the cylinder 16 which is associated with the first runway 12, and to the cylinder 22 which is associated with the second runway 14. The outlet of the rod chamber of the cylinders 16, 22 is connected by means of two pipes 32, 34 respectively, to the cylinder 20 which is associated with the second runway 14, and to the cylinder 18 which is associated with the first runway 12. The system 10 is thus of the cross-type, in which the main cylinders 16, 22 and the secondary cylinders 18, 20 are associated, one with each runway 12, 14. Consequently, according to the invention, the two runways 12, 14 are raised simultaneously with the filling of the main cylinders 16, 22, and the temporal staggering of operation of the secondary cylinders 18, 20 does not have significant consequences on the movement of the runways 12, 14. The vehicle is thus raised in a manner which is perfectly parallel to the ground, and the force on the pairs of cylinders which are associated with the two runways is perfectly symmetrical.

Finally, it should be noted that, although the arrangement illustrated in figure 2 is optimal from the point of view of synchronisation and automatic control of the movement of the runways, satisfactory results can also
5 be obtained by providing a pair consisting of a main cylinder and a secondary cylinder associated for each runway. Finally, it will be apparent to persons skilled in the art that the design characteristics of the cylinders are irrelevant, provided that the main cylinders have an
10 outlet for the fluid which can be used to supply the secondary cylinders. In addition, it will be appreciated that the basic principle of the invention can be extended to any number of pairs of cylinders, and it must thus be considered that numerous modifications, adaptations,
15 integrations, variants and substitutions can be made to the embodiment previously described by way of illustrative, non-limiting example, without departing from the context of the invention, as determined by the following attached claims.

20

CLAIMS

1. Volumetric operating system (10) for scissors-type vehicle lifts, comprising a plurality of cylinders (16, 18, 20, 22) for movement of the vehicle lifting runways (12, 14), of which the main cylinders (16, 22) receive the operating fluid directly from supply means (24, 28, 30), and the secondary cylinders (18, 20) receive the operating fluid from the outlet (32, 34) of a respective one of the main cylinders (16, 22), characterised in that with each runway (12, 14) there is associated at least one of the said main cylinders (16, 22), and at least one of the said secondary cylinders (18, 20).

2. System (10) according to claim 1, characterised in that the outlet of each main cylinder (16, 22) which is associated with one of the runways (12, 14) supplies a secondary cylinder (18, 20) which is associated with the other runway (12, 14).

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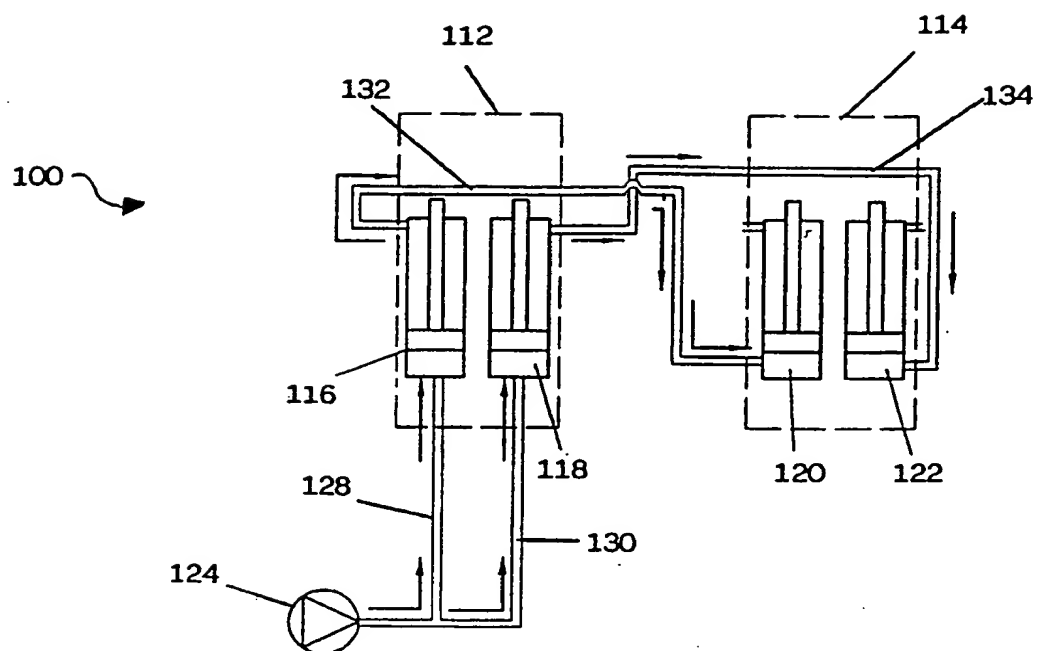


Fig. 1 PRIOR ART

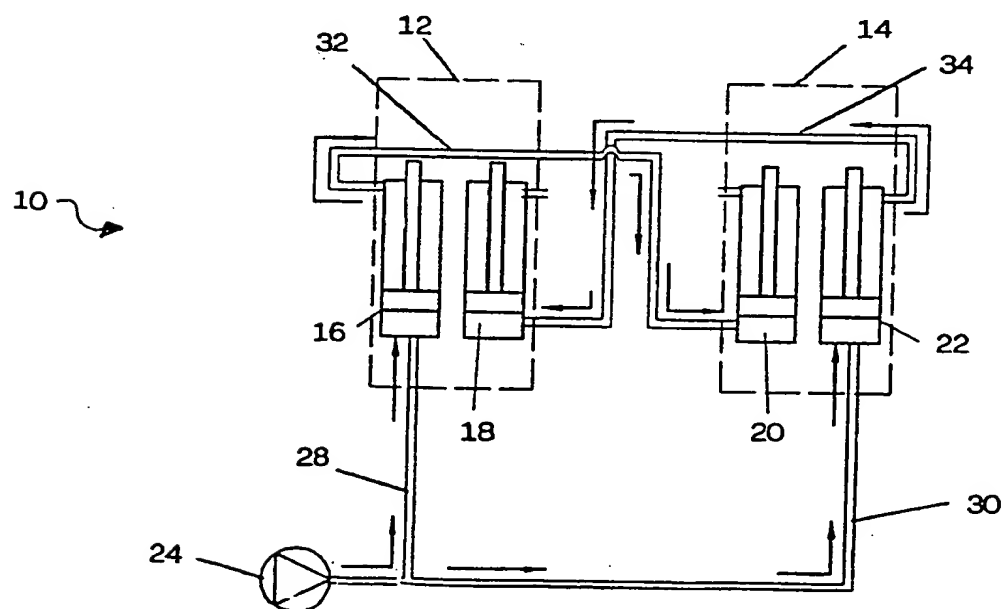


Fig. 2

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INTERNATIONAL SEARCH REPORT

International Application No.

PCT/IB 99/01778

A. CLASSIFICATION OF SUBJECT MATTER

IPC 7 B66F7/08

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 B66F

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	WO 95 11190 A (RAVAGLIOLI S.P.A.) 27 April 1995 (1995-04-27) page 1-8; figures 1-7	1
A	FR 1 575 128 A (CASCADE CORP.) 18 July 1969 (1969-07-18) page 1-8; figures 1,2	1

☐ Further documents are listed in the continuation of box C.☒ Patent family members are listed in annex.

* Special categories of cited documents:

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier document but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

"A" document member of the same patent family

Date of the actual completion of the international search

11 February 2000

Date of mailing of the international search report

18/02/2000

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Authorized officer

Vollering, J

INTERNATIONAL SEARCH REPORT

Informative patent family members

In. Application No

PCT/99/01778

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
WO 9511190 A	27-04-1995	IT 1264250 B AT 166038 T AU 8114694 A DE 69410283 D DE 69410283 T DE 724542 T EP 0724542 A ES 2116062 T	23-09-1996 15-05-1998 08-05-1995 18-06-1998 01-10-1998 03-04-1997 07-08-1996 01-07-1998
FR 1575128 A	18-07-1969	GB 1183676 A JP 48044461 B US 3476016 A	11-03-1970 25-12-1973 04-11-1969

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13 APR 2001

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Title: "VOLUMETRIC OPERATING SYSTEM FOR VEHICLE LIFTS"

5

TEXT OF THE DESCRIPTION

The present invention relates to vehicle lifts, in particular of the scissors type. In the following description, scissors-type lifts mean in general scissors-
10 and double-scissors-type lifts, in which, when the scissors are closed, the lift is lowered to ground level, and when the scissors are open, the lift is raised, and inverted- and double-inverted-scissors-type lifts, in which the scissors open beneath ground level, in order to lower the
15 lift, and are closed at ground level in order to raise the lift, optionally with the assistance of pistons or rack-type mechanisms.

Scissors-type lifts have been developed in which, in
20 order to move the lift, a pair of cylinders is provided for each of the lifting scissors of the runways. The known operating system for the cylinders is of the serial type, i.e. in a first runway there are disposed the main cylinders, the outlet of which supplies the secondary
25 cylinders which are associated with the other runway. This arrangement requires temporally staggered raising of the two runways, and thus gives rise to a loss of parallelism of the vehicle relative to the ground. In addition, the force on the pair of cylinders is asymmetrical, with all
30 the resulting problems.

The object of the present invention is thus to provide a volumetric operating system for vehicle lifts, in particular of the scissors type, which permits synchronised
35 movement of the runways.

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CLAIMS

1. Volumetric operating system (10) for scissors-type vehicle lifts, comprising a plurality of cylinders (16, 18, 20, 22) for movement of the vehicle lifting runways (12, 14), of which the main cylinders (16, 22) receive the operating fluid directly from supply means (24, 28, 30), and the secondary cylinders (18, 20) receive the operating fluid from the outlet (32, 34) of a respective one of the main cylinders (16, 22), characterised in that with each runway (12, 14) there is associated at least one of the said main cylinders (16, 22), and at least one of the said secondary cylinders (18, 20).

2. System (10) according to claim 1, characterised in that the outlet of each main cylinder (16, 22) which is associated with one of the runways (12, 14) supplies a secondary cylinder (18, 20) which is associated with the other runway (12, 14).

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